



# Kirtland Air Force Base



## Annual Consumer Confidence Report on the Quality of Drinking Water

2002 Operating Year

TEAM KIRTLAND,

During the Year 2002, drinking water issues remained high on the public's mind, and TEAM KIRTLAND was at the forefront of ensuring delivery of high quality water. Staff from Bioenvironmental Engineering, Civil Engineering, Office of the Judge Advocate, Environmental Management, and Public Affairs worked together to provide the community with information regarding our water resources and water quality. Please take time to read this report. Doing so will provide you with valuable insight towards understanding Kirtland AFB water quality issues and how they pertain to you. Should you have any questions regarding this report, please contact Bioenvironmental Engineering at 846-4259.



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### Kirtland Air Force Base, New Mexico Water System Information

This is the annual report on the quality of water delivered by Kirtland Air Force Base (AFB) during calendar year 2002. Under the "Consumer Confidence Reporting Rule" of the federal Safe Drinking Water Act (SDWA), community water systems are required to report water quality information to the consuming public. As required by regulation, results reported in 2003 are based upon samples collected and analyzed in 2002. This report presents information on the source of our water, its constituents and the health risks associated with any contaminants. Sources of drinking water include rivers, lakes, streams, ponds,

reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material from geologic formations. Water may also pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides and herbicides*, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production. Organic chemical contaminants can also come from urban stormwater runoff and septic systems.
- *Radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of contaminants. *The presence of contaminants does not necessarily indicate the water poses a health risk.* More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791 or going to their website: [www.epa.gov/safewater](http://www.epa.gov/safewater).



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer, persons undergoing chemotherapy, persons who have had organ transplants, people with HIV/AIDS or other immune system disorders, the elderly and infants can be particularly

at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

The drinking water delivered to you is pumped from a ground water source known as the Albuquerque Basin Regional Aquifer from the Santa Fe Formation. Kirtland



AFB is capable of drawing its water from 8 different wells within the Albuquerque Basin Aquifer. In 2002, 1.24 billion gallons of water were pumped from these wells. The water from the wells is mixed, chlorinated, stored and

distributed. Chlorination is the only treatment process performed to prevent bacteria from growing while the water is stored and distributed through the system. Additionally, water pumped and treated by the city of Albuquerque is distributed throughout the base during periods of high water demand or low water levels. A total of 23,500 gallons of water was purchased from the city of Albuquerque in 2002. *The city of Albuquerque's Consumer Confidence Report is attached for your convenience. You can also access the report on the city's website at [www.cabq.gov/waterquality](http://www.cabq.gov/waterquality).*

## Kirtland Air Force Base Source Water Assessment

Through the 1996 reauthorization of the Safe Drinking Water Act, Congress authorized the U.S. Environmental Protection Agency to require each state to develop and implement a Source Water Assessment and Protection Program. Through this program, an assessment of all public water sources within the State of New Mexico is required to be completed. The New Mexico Source Water Assessment and Protection Program is part of the national effort to gather information on public drinking water source areas, and to inform water consumers about any risks to their water supply posed by various potential sources of contamination. The Source Water Assessments of public water systems throughout New Mexico involve four basic steps:

1. Determining the source water protection area for the community's water system;
2. Taking inventory of potential contaminant sources within the source water protection area;

3. Determining the susceptibility of the water supply to potential sources of contamination; and
4. Making the assessment available to the public.

During May and June 2002, New Mexico Environment Department – Drinking Water Bureau (NMED-DWB) personnel conducted site visits, collected information on Kirtland AFB's production wells, and identified potential sources of contamination in the areas around the wells. The results of this effort by NMED-DWB are detailed in a August 21, 2002 report titled, "Source Water Assessment of Kirtland Air Force Base Water System – Public Water Supply System #NM 35 677 01." A specific mandate of the Safe Drinking Water Act is to make the results of this assessment available to water consumers. To meet this requirement, NMED-DWB will provide copies of this report to the public upon request. To obtain a copy of the Source Water Assessment completed for Kirtland AFB, contact the NMED-DWB in Santa Fe, NM toll free at 1-877-654-8720 or email them at [SWAPP@nmenv.state.nm.us](mailto:SWAPP@nmenv.state.nm.us). Additionally, a copy of the report is available to consumers who contact the Kirtland AFB Environmental Management Office at 846-8577.

## Monitoring Kirtland Air Force Base Drinking Water

Our staff uses only EPA-approved laboratory methods to analyze your drinking water. Bioenvironmental Engineering staff collect water samples from the entry points into the water distribution system and from residents' taps.

These samples are then shipped to a certified laboratory where all of the required water quality analyses are performed. Listed below are the types of contaminant groups Kirtland AFB monitors in its drinking water and how often monitoring is performed for each contaminant group.

Contaminant Group	Monitoring Frequency
Biological Contaminants (total coliform group)	Weekly
Total Trihalomethanes (TTHMs)	Quarterly
Nitrates & Nitrites	Annually
Lead and Copper	Once every 3 years
Inorganic Chemicals (IOCs)	Once every 3 years
Volatile Organic Compounds	Once every 3 years
Synthetic Organic Compounds	Once every 3 years
Radionuclides	Four quarterly samples every 4 years
Unregulated Contaminants	Once every 5 years
Asbestos	Once every 9 years

**DEFINITIONS OF KEY TERMS** - To gain a better understanding of this report, several key terms are defined for consumers.

**Maximum Contaminant Level Goal (MCLG)** – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs have a built in margin of safety.

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close as possible to the (MCLG).

**Method Detection Limit (MDL)** – The lowest concentration of a contaminant that can be detected using the required EPA sampling and analysis methods. An MDL is specific for each contaminant and type of analysis performed.

**Table of Detected Compounds**

Detected Compounds	MCLG	MCL (or AL)	Level Detected	Results Ranged From:	Sample Dates	Exceeded MCL? (yes/no)	Likely Source of Contaminant
<i>Total Coliforms</i>	0	1/month	2	0 - 2	16-Apr-02 28-Aug-02	Yes <sup>(1)</sup>	Naturally present in the environment or sample collection/laboratory error
Nitrate, as N	10 ppm	10 ppm	0.83 ppm	ND – 0.83 ppm	24-Apr-02	No	Runoff from fertilizer use or sewage
Copper	1300 ppb (AL)	1300 ppb (AL)	77 ppb <sup>(2)</sup>	5 - 112 ppb	11-Jun-01	No <sup>(3)</sup>	Corrosion of household plumbing systems
Lead	0	15 ppb (AL)	2 ppb <sup>(2)</sup>	ND - 9 ppb	11-Jun-01	No <sup>(3)</sup>	Corrosion of household plumbing systems
Arsenic	-	50 ppb <10 ppb <sup>(4)</sup> >	23 ppb	2 – 23 ppb	24-Apr-02	No	Naturally present in the environment
Barium	2 ppm	2 ppm	0.16 ppm	0.10 - 0.15 ppm	24-Apr-02	No	Erosion of natural deposits
Beryllium	0.004 ppm	0.004 ppm	0.002 ppm	ND – 0.002 ppm	24-Apr-02	No	Discharge from electrical, aerospace, and defense industries.
Selenium	0.05 ppm	0.05 ppm	0.002 ppm	ND – 0.002 ppm	24-Apr-02	No	Discharge from electronics and drug factories.
Gross Alpha Particle Activity	0	15 pCi/L	6.7 pCi/L	2.1-6.7 pCi/L	1999 <sup>(3)(6)</sup>	No	Erosion of natural deposits
Gross Beta Particles & Photon Emitters	0	4 rem/yr <sup>(5)</sup> (50 pCi/L)	7.8 pCi/L	3.1-7.8 pCi/L	1999 <sup>(3)(6)</sup>	No	Decay of natural and manmade deposits
Total Trihalomethanes	-	80 ppb	2.85 ppb <sup>(7)</sup>	1.11 - 5.01 ppb	2002	No	By-product of drinking water disinfection
<b>Other Detected Compounds Not Regulated by EPA</b>							
Calcium	-	NA <sup>(8)</sup>	53.2 ppm	34.5 - 53.2 ppm	24-Apr-02	No	Erosion of natural deposits
Magnesium	-	NA <sup>(8)</sup>	8 ppm	5.9 - 8 ppm	24-Apr-02	No	Erosion of natural deposits
Manganese	-	NA <sup>(8)</sup>	0.01 ppm	ND – 0.01 ppm	24-Apr-02	No	Erosion of natural deposits

<sup>(1)</sup> Confirmation samples were collected in accordance with New Mexico Environment Department Regulations. Results from subsequent samples do NOT exceed the MCLs.

<sup>(2)</sup> This value represents the 90th percentile value, used for compliance reporting. 90% of results in the test set were below this level.

<sup>(3)</sup> As explained in a previous table, samples for these compounds are not required to be analyzed on an annual basis. These data represent the most recent round of sampling.

<sup>(4)</sup> The new MCL for arsenic as of February 22, 2002 is 10 ppb. Drinking water systems must comply with the new MCL by January 23, 2006.

<sup>(5)</sup> 4 mrem/yr represents an annual dosage, 50 pCi/L represents a concentration. The EPA considers 50 pCi/L to be the level of concern for beta particles.

<sup>(6)</sup> Samples were collected once per quarter for four consecutive quarters starting in the second quarter of 1999.

<sup>(7)</sup> This represents the annual average of four quarterly test results, the value used for compliance reporting. The range represents the range of actual detected concentrations.

<sup>(8)</sup> This compound is not regulated by the EPA at this time. Therefore, there are no MCLG or MCL values for this compound.

#### ACRONYMS AND COMMONLY USED TERMS IN THIS REPORT

AL	Action Level; the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a system must follow.
NA	Not applicable or does not apply.
ND	Not detected; the element is not present at a level above the detection limit of laboratory instruments.
pCi/L	picocuries per liter, a measure of radioactivity in water
ppb	parts per billion, a unit of measure equivalent to a single penny in \$10,000,000.
ppm	parts per million, a unit of measure equivalent to a single penny in \$10,000
Range	The range from the highest to the lowest reported analytical values for a contaminant for the most recent EPA sampling period (either the last round of sampling, or the 4th quarter of 2001). The EPA requires this range to be reported.

## Detected Compounds

We constantly monitor for various constituents in the water supply to meet all regulatory requirements. The Detected Compounds table lists only those compounds that were detected at levels equal to or greater than laboratory method detection limits (MDLs). Many other compounds are also analyzed but were not present or were below the detection limits of the laboratory equipment.

A brief explanation of our results for total coliform (the only compound that exceeded an MCL) is provided below:

**Total Coliform** – Since we collect fewer than 40 total coliform samples per month, EPA requires us to report the highest monthly number of positive sample detections. As presented in the Detected Compounds table, we had positive samples for this contaminant detected in April and August of 2002. The detection in April was a single detection with one follow-up sample also positive and all subsequent follow-up samples negative. There were two detections in August; all follow-up samples were negative. The two detections in August were the highest number of positive samples within any given month during the year and did exceed the MCL. Final confirmation samples collected after the positive detections were negative for total coliform.

## Compliance with National Primary Drinking Water Regulations

No compounds detected in Kirtland AFB drinking water during 2002 were at levels exceeding the EPA MCLs, with the exception of total coliform. As reported in the Detected Compounds table detected concentrations of various compounds were below applicable MCLs. The one exception was the August 2002 detection of two positive total coliform results from within the drinking water distribution system. All subsequent follow-up samples to the two detections were found to be negative. As required by the Safe Drinking Water Act regulations proper public notification of these exceedances was made at the time.



## Information on Lead, Copper and Arsenic in Drinking Water

The results reported on the Detected Compounds table indicate that Kirtland AFB water does not exceed current regulatory action levels for lead or copper. However, since consumers often inquire about these compounds some information is provided below. Consumers may also have heard some of the recent publicity regarding arsenic standards; therefore, additional information about the changing arsenic regulations and how Kirtland AFB will comply with the new standard is also provided here.

Lead and copper rarely occur naturally in drinking water at levels above national standards. Too much lead in the human body can cause negative health effects including serious damage to the brain, kidneys, nervous system and

red blood cells. Long-term exposure to high levels of copper can result in stomach and intestinal problems. Young children and infants tend to be more sensitive to high levels of these compounds. Lead and copper are most commonly found in household drinking water where corrosion has occurred in the plumbing system. This is not usually a concern in older homes (built before 1982) because a protective mineral layer has built up on the inside of the pipes. A significant source of lead in household water is from lead solder used to join pipes. The use of lead solder was discontinued in New Mexico in 1987. Kirtland AFB sampling for lead and copper have not indicated levels in exceedance of the applicable MCLs. (The action level for lead is 15 ppb and for copper is 1,300 ppb.)

The 1996 Amendments to the Safe Drinking Water Act required EPA to review/revise the existing 50 parts per billion (ppb) standard for arsenic in drinking water. In January 2001, EPA published the new standard for arsenic in drinking water that required public water supplies to reduce arsenic levels to 10 ppb. Following further EPA review of costs and benefits of the new standard, the new MCL of 10 ppb became effective on February 22, 2002. Kirtland AFB will be required to comply with the new standard for arsenic by January 2006.

Arsenic is a naturally occurring element in the groundwater below Kirtland AFB. During the calendar year 2002, compliance sampling showed arsenic levels in Kirtland AFB's drinking water ranging from 2 ppb to 23 ppb. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Kirtland AFB's Civil Engineering, Environmental Management, and Bioenvironmental Engineering groups have evaluated several alternatives in order to ensure compliance with the new arsenic standard by January 2006. The methods of compliance that were evaluated included treatment at the wellhead and blending of water from several wells prior to entering the distribution lines. Based on this evaluation, and the results of monthly sampling conducted at each active production well, the water blending method was selected to ensure compliance with the new arsenic standard. A project that will involve installation of new waterlines, storage tanks, and other associated water system infrastructure, will be initiated in 2004. Kirtland AFB's Environmental Management will continue sample collection at each active production well in order to monitor arsenic levels in the water.

## Public Involvement

Members of Bioenvironmental Engineering, Civil Engineering, Environmental Management, Office of the Judge Advocate and Public Affairs, along with CH2M HILL, prepared this Consumer Confidence Report. For any questions regarding this report or water quality at Kirtland AFB, please contact Bioenvironmental Engineering at (505) 846-4259.